



AURKC gene

aurora kinase C

Normal Function

The *AURKC* gene provides instructions for making a protein called aurora kinase C. This protein regulates certain events during cell division. Cell division occurs when a cell replicates and splits its contents, separating into two new cells. Aurora kinase C helps the two dividing cells separate from each other and ensures that these cells each contain a complete set of chromosomes. Aurora kinase C is most abundant in male testes, which are the male reproductive organs in which sperm are produced and stored. In the testes, this protein regulates the division of sperm cells, ensuring that every new sperm cell divides properly and contains one copy of each chromosome.

Health Conditions Related to Genetic Changes

macrozoospermia

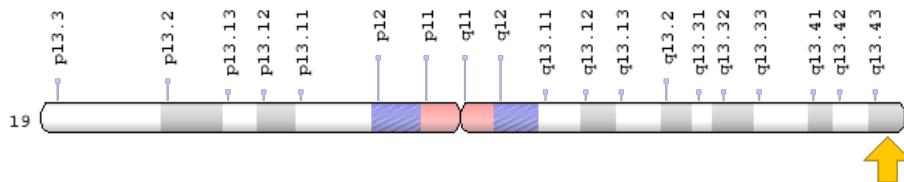
At least four mutations in the *AURKC* gene have been found to cause macrozoospermia. This condition causes males to have abnormal sperm, which leads to an inability to father biological children (infertility). *AURKC* gene mutations that cause macrozoospermia lead to the production of a nonfunctional protein or a protein that is quickly broken down. One mutation that is a frequent cause of this condition in men of North African descent deletes a single DNA building block (nucleotide) from the *AURKC* gene (written 144delC). The protein produced from the altered gene is abnormally short and nonfunctional.

A lack of aurora kinase C blocks cell division in sperm cells. As a result, sperm cells have extra chromosomes, usually four copies of each instead of the usual one. This increase in chromosome number enlarges the sperm cell head and leads to the presence of multiple tails (flagella). Because of the additional genetic material, if one of these abnormal sperm cells combines with an egg cell, the embryo will not develop or the pregnancy will result in miscarriage.

Chromosomal Location

Cytogenetic Location: 19q13.43, which is the long (q) arm of chromosome 19 at position 13.43

Molecular Location: base pairs 57,230,317 to 57,235,550 on chromosome 19 (Homo sapiens Annotation Release 108, GRCh38.p7) (NCBI)



Credit: Genome Decoration Page/NCBI

Other Names for This Gene

- AIK3
- AIK3 protein kinase
- ARK-3
- ARK3
- AurC
- aurora-related kinase 3
- aurora/IPL1-like kinase 3
- aurora/IPL1-related kinase 3
- serine-threonine-protein kinase 13
- serine/threonine-protein kinase aurora-C
- STK13

Additional Information & Resources

Educational Resources

- Developmental Biology (sixth edition, 2000): Spermatogenesis
<https://www.ncbi.nlm.nih.gov/books/NBK10095/>
- Madame Curie Bioscience Database: Cytogenetics of Human Sperm
<https://www.ncbi.nlm.nih.gov/books/NBK6064/>
- Molecular Biology of the Cell (fourth edition, 2002): Sperm
<https://www.ncbi.nlm.nih.gov/books/NBK26914/>

Scientific Articles on PubMed

- PubMed
<https://www.ncbi.nlm.nih.gov/pubmed?term=%28AURKC%5BTIAB%5D%29+OR+%28aurora+kinase+C%5BTIAB%5D%29%29+AND+%28%28Genes%5BMH%5D%29+OR+%28Genetic+Phenomena%5BMH%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+3600+days%22%5Bdp%5D>

OMIM

- AURORA KINASE C
<http://omim.org/entry/603495>

Research Resources

- Atlas of Genetics and Cytogenetics in Oncology and Haematology
http://atlasgeneticsoncology.org/Genes/GC_AURKC.html
- ClinVar
<https://www.ncbi.nlm.nih.gov/clinvar?term=AURKC%5Bgene%5D>
- HGNC Gene Symbol Report
http://www.genenames.org/cgi-bin/gene_symbol_report?q=data/hgnc_data.php&hgnc_id=11391
- NCBI Gene
<https://www.ncbi.nlm.nih.gov/gene/6795>
- UniProt
<http://www.uniprot.org/uniprot/Q9UQB9>

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